visable to employ it in large doses intravenously as well as by mouth.

CONVULSIVE TIC

Painful facial spasm or convulsive tic is a rather rare condition associated with severe paroxysms of facial pain accompanied by spasmodic contractions of the facial muscles. These may involve any part of the face, and care must be taken not to confuse this condition with tic douloureux. The etiology of convulsive tic is entirely unknown. Treatment is not particularly satisfactory; section of the fifth nerve gives no relief; section of the seventh nerve stops the facial spasm, but the pain may persist.

POSTHERPETIC NEURALGIA

Another very distressing condition, one of frequent occurrence, is postherpetic neuralgia. Herpes zoster may involve any of the branches of the trigeminal nerve, but the ophthalmic branch about the forehead and eye is most frequently affected. The pain is of constant burning character and may persist long after the eruptions have disappeared. It is not unusual for a patient to threaten suicide because of constant, intense pain.

In the acute stages, iodids may be helpful and, in some instances, the intravenous use of endoarson (containing iodin, arsenic, and phosphorus) will stop all pain when narcotics have been valueless. Injections of pituitrin also have been used with some success. According to some reports, diphtheria antitoxin has been used with relief of pain. On the other hand, these measures may afford very little relief in chronic postherpetic pain. Section of branches of the fifth nerve, or the sensory root itself, are valueless and are contraindicated. The use of vitamin B_1 is worthy of a trial, and x-ray therapy has been reported as giving occasional relief. Unfortunately, many of these patients are not benefited by any known measures of treatment.

PAIN IN MALIGNANT DISEASE

Malignant disease about the head and neck is often associated with severe and intractable pain. In many instances these conditions are not of a rapidly progressive nature, and patients may survive for several years. Pain, however, may make life unbearable, and the use of increasing amounts of narcotics is not only depressing but does not afford real relief.

Malignancies of the lip, tongue, cheek and accessory sinuses may produce severe pain in portions of the distribution of the fifth nerve. Interruption of the sensory fibers to the involved area will result in anesthesia and loss of pain. This may be accomplished by alcohol injections in localized lesions or by section of the sensory root of the fifth nerve if the pathological process is more widespread. Pain may extend beyond the limits of the fifth nerve, involving the palate, as in carcinoma of the tongue, or extending into the region supplied by the cervical nerve. Consequently, a careful analysis of the location and extent of the pain is essential before any procedure is undertaken. The ninth nerve supplying the palate may be sectioned intracranially and, at the same time, the upper cervical roots may be divided to relieve pain in their distribution.

Sjoquist recently described section of the bulbospinal tract of the fifth nerve for the relief of pain. The section is made intracranially in the brain stem and results in loss of pain and temperature sense on the homolateral side of the face, but allows preservation of the sense of touch. Sjoquist used this procedure in the treatment of tic douloureux, but it is equally applicable to the relief of the pain caused by malignancy. More important is the fact that section of the ninth nerve, the tract of the fifth nerve, and the upper cervical nerves can be combined in one operative procedure if pain is extensive. Otherwise it is necessary to section the fifth nerve through a subtemporal approach, and the other nerves by a suboccipital exposure. Following the production of anesthesia and the relief of pain, the local lesion may be excised or removed in so far as possible without anesthetic, overcoming some of the unsightliness to the patient and those about him.

These procedures are, of course, highly technical and are attended by some degree of risk. The patient's unrelenting pain must be taken into account, however, together with the prognosis of the malignancy. Such methods of treatment are really acts of mercy which the patient should have an opportunity to accept or refuse before resorting to the steady use of drugs. In any event, such therapy should be considered before the patient has become addicted to narcotics. The majority of patients prefer the surgery and its risk to the nightmare of a future without hope or comfort.

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APPENDICEAL CALCULUS

REPORT OF CASE

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ALTHOUGH foreign bodies in the lumen of the vermiform appendix are occasionally encountered, the presence of a true calculus visible by the roentgen ray is of rare occurrence. Appendoliths, which are nothing more than fecal concretions, are found with such frequency as to suggest a possible etiologic connection. Wangensteen and Bowers[1] found fecaliths in 80 per cent of their cases which terminated in gangrene and 44 per cent of the suppurative cases. However, it is not within the scope of this paper to discuss the rôle of concretions either in the etiology or the end-results of appendicitis.

Mitchell,[2] in an exhaustive review which appeared forty-one years ago, gives details of numerous case histories of the presence of many interesting objects found within the lumen of the appendix. Among the various objects which have been found were shot, pins, worms, teeth, gall-stones, bullets, fruit seeds, and many others. In many instances these patients showed no ill effects from the presence of these foreign bodies, and many were found accidentally at autopsy when death was due to

Fig. 1.—Note large amount of gas in bowels.

other causes. In this connection, Mitchell [2] quotes an interesting observation by Hevin in the Mémoires de l'académie Royale de Chirugie, 1743, 1, 460: "One notices sometimes in opening the bodies of persons who, during life have eaten a great deal of game, that there is collected in the intestines, and especially in the cecal appendix, a great quantity of shot, without these persons having had the least inconvenience."

In contradistinction to the ordinary fecalith and to foreign bodies which are accidentally ingested (of which there are many recorded cases), a true calculus or a calcified fecalith is extremely rare. Recent literature gives very few statistics on its frequency. Bunch and Adcock,[3] in a series of two thousand cases, have encountered it only on one occasion. It is probable that very few active surgeons have ever encountered such a case during their surgical experience. It is peculiar that such a large calculus as reported in this case, which necessarily must have been present for some time, should not have caused previous symptoms. Royster,[4] up until 1921, gives Packard [5] the credit of having removed the largest appendix stone on record, weighing eight grams and measuring 1 by 2 by 4 centimeters. This, however, is surpassed in size by the stone removed by Bunch and Adcock,[3] which weighed 13.5 grams and consisted essentially of calcium and magnesium phosphates.

DIAGNOSIS

A true calculus of the appendix is always visible by the roentgen ray, but because of its rarity its shadow is usually mistaken for the much more frequent ureteral calculus. If barium has been previously administered, a persistent residue in the appendix may coat the concretion and give a similar shadow. The passage of an opaque ureteral catheter will usually allow a differentiation. Douglas and LeWald [6] reported a case of a calcified fecal concretion which was found in the abscess cavity after the appendix had ruptured and which had been previously visualized by the roentgen ray.

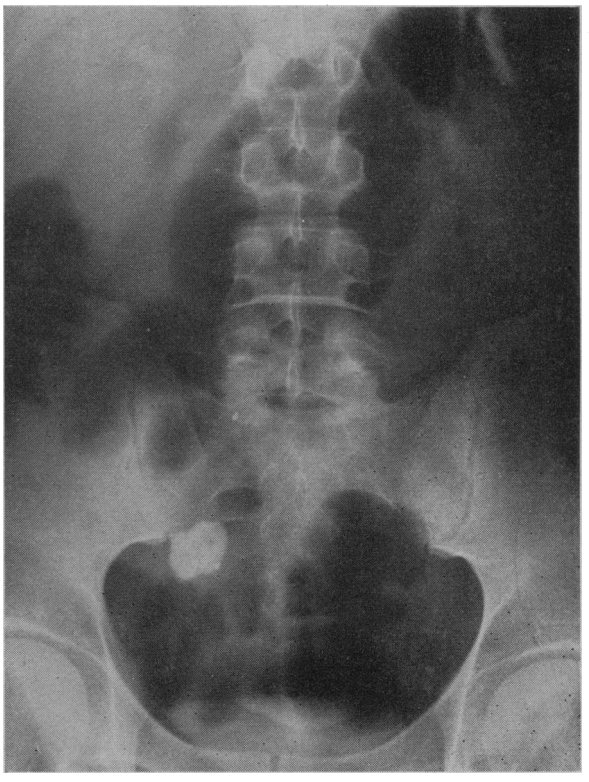

Fig. 2.—Note position of calculus changed, also apparent large size of right kidney with lack of dye. Dye present in left kidney pelvis.

To illustrate the difficulty of diagnosing radio opaque concretions of the appendix preoperatively, Phahler and Stamm,[7] in 1915, stated that only one case had been diagnosed before operation, and that by Weisflog, in 1906, who found two stones in the appendix. However, since then there have been scattered reports of such concretions demonstrable by the roentgen ray. In many instances they have been found lying free in the peritoneal cavity, having escaped from a ruptured appendix. Case,[8] in 1916, reported two instances of concretions correctly diagnosed by the roentgen ray and confirmed at operation. Even with the use of the opaque ureteral catheter, mistakes in diagnoses are made, as attested by the similar cases of Seelig [9] and Eastmond.[10] In both instances the ureter was obstructed at the point of the suspicious shadow. The obstruction of the ureter was caused by an inflamed appendix adherent to the ureter, and the shadow in the roentgenogram was due to the concretion in the appendix in close proximity to the

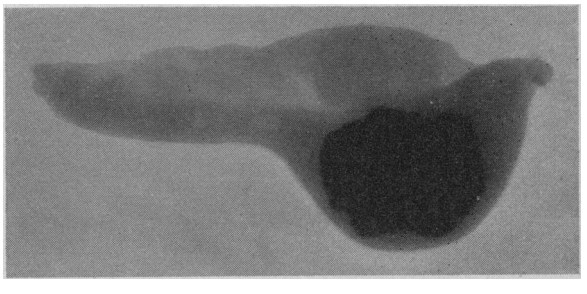

Fig. 3.—X-ray film of appendix immediately after removal.

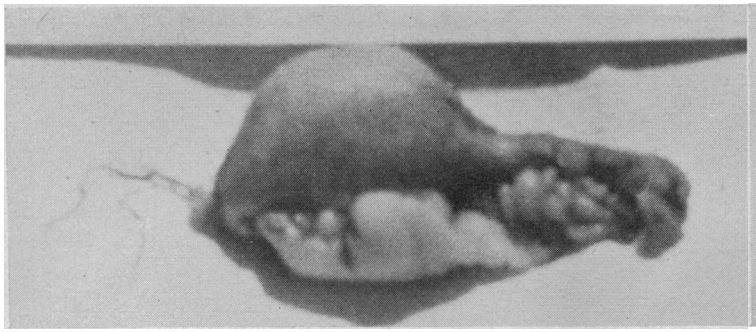

Fig. 4

Fig. 5

Fig. 4.—The calculus occupies the proximal half of the appendix.
Fig. 5.—Photograph of calculus measuring 2½ cm. in length. Note nodular appearance.

ureter. In such instances, a lateral roentgenogram with the opaque catheter in position will greatly aid in clearing up the diagnosis.

The following case is reported because of the paucity of reports in the literature, thus indicating the rarity of the condition, the large size of the calculus, the freedom of previous symptoms, the absence of advanced inflammatory changes in the appendix, and the bizarre clinical and roentgen findings which confused the clinical picture to such an extent that no suspicion was cast on the appendix as the offending organ.

REPORT OF CASE

W. L. W., white, married, male, age 38, and a farm laborer. For the past few years he has been a heavy drinker of alcohol and, except for occasional attacks of "sprained back," he has never been ill. He was first seen at 8 a. m. on April 22, 1940, complaining of severe pain in the right lumbar region, radiating to the right groin and across the upper abdomen. This condition came on suddenly eight hours before, during which time he vomited twice. Temperature was 98.2 Fahrenheit, pulse 82 per minute, and respirations 18 per minute.

Physical examination revealed a muscular, ruddy male, who was unable to lie still because of the severe pain. He was moderately tender over the right kidney, but the kidney could not be palpated. Palpation of the abdomen revealed moderate, guarded rigidity over the entire abdomen, but there were no areas of tenderness, although he said he felt "sore" over the entire upper abdomen. There was no frequency or dysuria and no hematuria was noted. He had taken two enemata during the night without relief. A diagnosis of right ureteral colic was made, and he was given 0.030 gram (one-half grain) of morphin sulphate hypodermically. He was again seen twelve hours later. He had obtained no relief from the previous hypodermic. Symptoms and physical findings were identical with the previous examination. There was no abdominal tenderness. The urine was normal except for an occasional pus cell. The blood picture at that time showed 94 per cent hemoglobin (Sahli), 4,600,000 red blood cells, and 6,200 white blood cells, with a normal differential count. He was again given 0.030 gram (one-half grain) of morphin hypodermically. When he was seen the next morning (thirty-two hours after the onset), he still had obtained no relief from the pain although he had taken five tablets of pantopon by mouth, each containing 0.020 gram (one-third grain).

Temperature was 99 degrees Fahrenheit, and pulse 78. The urine was normal and was negative for blood, both chemically and microscopically. He was still moderately tender over the right kidney, but at no time did he complain of pain or tenderness over the right lower quadrant. A plain x-ray (Fig. 1) was taken of the abdomen, and revealed a huge calculus in the right upper part of the true pelvis at the lower margin of the sacro-iliac joint. An enormous amount of gas was seen to distend the bowels. This latter finding was peculiar, as the patient's abdomen was almost scaphoid. The large amount of gas confused the diagnosis since, although the calculus had all the characteristics of a large ureteral stone, the possibility of a large calculus, probably a gall-stone, obstructing the bowel was taken into consideration. He was treated conservatively, and twenty-four hours later, following an enema and an injection of prostigmin, another plain film was taken. The roentgen findings were identical. His symptoms and physical findings were the same. Temperature was normal and urinalysis was entirely negative. Intravenous pyelography was then performed. Films taken five minutes after the injection of the dye showed the calculus in the same position, the right kidney seemed enlarged, and no dye could be seen in the right kidney pelvis, although dye showed in the left kidney pelvis. Another film (Fig. 2) was taken fifteen minutes after the injection of the dye. The dye was plainly visible in the left kidney pelvis. No dye could be seen in the right kidney pelvis, and the right kidney seemed greatly enlarged. A diagnosis of calculus of the lower third of the right ureter with hydronephrosis was made.

Because of the clear-cut findings of intravenous urography, it was not deemed necessary to perform retrograde catheterization of the right ureter. But as later events proved, such a procedure would probably have changed the diagnosis.

Operation.—Operation was performed fifty-six hours after the onset of symptoms, under spinal anesthesia. A midline surprapubic incision was made, the peritoneal fold was retracted upward, and the right ureter was exposed in its lower third. No calculus was found. The peritoneal cavity was then opened. The peritoneum itself and the intestines appeared normal. The appendix was easily brought out into the wound. It was lying free and the large size of its proximal end, together with its firm consistency, immediately revealed that the calculus was lying within the lumen of the appendix. The distal end of the appendix was firm but not acutely inflamed. The appendix was easily removed in the usual fashion. An x-ray film (Fig. 3) of the specimen, taken immediately, showed the identical calcified shadow as in the pictures taken preoperatively. The anterior abdominal wall was closed in the usual manner. Convalescence was uneventful, the patient leaving the hospital on the tenth postoperative day and returning to his usual occupation in six weeks.

Grossly, the entire proximal half of the appendix was filled by the calculus (Fig. 4). The serosa over the calculus was smooth and blanched, while in its distal half it contained a few dilated vessels. Nowhere was there any evidence of an acute inflammatory reaction. When the appendix was opened the entire wall around the calculus was greatly thickened and felt like cartilage. The stone was easily extracted and the mucosa throughout the entire organ was thickened, but normal.

The calculus (Fig. 5) measured 1 by 2 by 2½ centimeters and weighed 6.9 grams. The surface was grayish brown and was marked by many small nodules from pinhead to small pea in size.

CONCLUSIONS

1. From a search of the literature it appears that this is the third largest appendiceal calculus on record, being surpassed by that of Bunch and Adcock and that of Packard.

2. Possibility of extraureteral calculi must be considered in all calcified shadows in the region of the ureters.

3. Reliance on intravenous urography alone will frequently lead to erroneous conclusions, and all such suspicious shadows should have roentgenograms made in the lateral position, with the opaque ureteral catheter in place.

4. Foreign bodies may be present in the appendix for considerable time without causing acute inflammatory changes in that organ.

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OPERATIVE-SUPPORTIVE TREATMENT OF VARICOSE ULCERS*

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ALTHOUGH the treatment of varicose ulcer has received a great deal of attention from the profession, our experience has led us to believe that many physicians are not as yet fully acquainted with the methods for successful healing which are available, nor with the anatomical and physiological principles upon which these procedures are based. We still see, for example, the application of salves and antiseptic preparations to the ulcer, apparently on the assumption that the etiologic factor is infectious or inflammatory in nature. Moreover, we frequently find patients who have been insufficiently benefited by injection and surgical procedures which have been applied without a full realization of the principles involved. Indeed, at certain stages in the development of our own technique we have been guilty of some of these faults.

It is our purpose, therefore, to describe in this paper the anomalies which are responsible for ulcer formation and to present a type of therapy, designed to correct them, which has been quite successful in our hands. The methods are not original with us, except for certain individualized adaptations.

ETIOLOGY

The various theories of etiology will not be discussed here, since they have been described fully by others.[1-5] We wish only to point out, first, that the end-result is a valvular incompetence which is associated with reflux blood flow and an increase in the venous blood pressure in the superficial or deep venous systems; and, second, that the increase in venous pressure tends to reduce, and in certain circumstances actually to neutralize, the osmotic pressure of the blood colloids whose purpose is to draw tissue fluid into the venous capillaries. As a result, fluid is retained in the tissue spaces and may give rise either to localized edema, cell death, and ulcer formation, or to the diffuse edema, erythema, and scaly skin which has been called "varicose eczema." The incompetency most often seen involves the valve of the long saphenous vein located just distal to the sapheno-femoral junction. Incompetency may also be present in the short saphenous, or the thigh or lower leg perforator veins. Usually it is observed singly, although more than one vein may be involved. When this occurs it may be difficult, or even impossible, to discover all of the points of leakage. In such cases the treatment of the varices is raised from the level of a simple procedure to that of a complex diagnostic and therapeutic problem.

EXAMINATION

The patient is questioned for evidence of diabetes, thrombophlebitis (past or present), hereditary varicosis, and recurring ulceration. The state of the general and peripheral arterial circulation is studied, and the veins are tested for valvular incompetencies and for patency of the deep venous system. The former are determined by the multiple tourniquet method, and the latter by a modification of the von Perthe test. These procedures are well known and need not be described here.

TREATMENT

Successful treatment is directed toward correcting the defects in normal function. It comprises, first, the interruption of the reflux or "private circulation" in the superficial venous system; second, the obliteration of the long stretches of ineffectively valved, superficial venous channels; and, third, the rapid elimination of edema and induration. The first of these is accomplished by operation, the second by the injection of sclerosing solutions, and the third by proper support.

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